

IN THE CLAIMS:

None of the claims have been amended herein. All of the pending claims 1 through 24 are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as previously amended.

1. (Previously presented) A computer system comprising:
a computer having a circuit board therein; and
at least one semiconductor assembly mounted to the circuit board, the at least one semiconductor assembly comprising:
a substrate having a first surface, a second surface and at least one substantially centrally located opening therethrough, the at least one substantially centrally located opening in the substrate extending from the first surface to the second surface of the substrate;
a semiconductor die having an active surface and a back surface, the active surface of the semiconductor die attached to the first surface of the substrate;
a plurality of bond wires extending through the at least one substantially centrally located opening in the substrate and bonded from the active surface of the semiconductor die to the second surface of the substrate; and
a plurality of conductive bumps disposed between the active surface of the semiconductor die and the first surface of the substrate.
2. (Previously presented) The computer system of claim 1, further comprising a processor device electrically connectable to the at least one semiconductor assembly.
3. (Previously presented) The computer system of claim 2, further comprising an input device electrically connectable to the processor device.

4. (Previously presented) The computer system of claim 2, further comprising an output device electrically connectable to the processor device.
5. (Previously presented) The computer system of claim 1, wherein the at least one semiconductor assembly further comprises a filler material located between the semiconductor die and the substrate.
6. (Previously presented) The computer system of claim 1, wherein the plurality of conductive bumps comprises power and ground connections between the semiconductor die and the substrate.
7. (Previously presented) The computer system of claim 1, wherein the plurality of conductive bumps comprises a portion of signal routing between the semiconductor die and the substrate.
8. (Previously presented) The computer system of claim 1, wherein the plurality of bond wires and the plurality of conductive bumps comprise signal routing between the semiconductor die and the substrate.
9. (Previously presented) The computer system of claim 1, wherein the at least one semiconductor assembly further comprises a sealant material encapsulating at least the plurality of bond wires.
10. (Previously presented) The computer system of claim 9, wherein the sealant material substantially encapsulates exposed portions of the semiconductor die.

11. (Previously presented) The computer system of claim 1, wherein the at least one semiconductor assembly further comprises interconnect bumps disposed on the second surface of the substrate.

12. (Previously presented) The computer system of claim 11, wherein the interconnect bumps interconnect with the circuit board.

13. (Previously presented) The computer system of claim 12, wherein a filler material is disposed between the second surface of the substrate and the circuit board.

14. (Previously presented) The computer system of claim 1, wherein the at least one opening of the substrate of the at least one semiconductor assembly is substantially centrally located in the substrate.

15. (Previously presented) The computer system of claim 14, wherein the semiconductor die is attached to the substrate having centrally located bond pads on the active surface of the semiconductor die exposed through the at least one opening and outer bond pads on the active surface of the semiconductor die are mirrored with bond pads on the first surface of the substrate having the plurality of conductive bumps therebetween.

16. (Previously presented) A computer system comprising:
a computer having a circuit board therein; and
at least one semiconductor assembly mounted to the circuit board, the at least one semiconductor assembly comprising:
a substrate having a first surface, a second surface and a plurality of openings extending proximate more than one side of a periphery of the substrate, the plurality of openings in the substrate extending from the first surface to the second surface of the substrate;
a semiconductor die having an active surface and a back surface, the active surface of the semiconductor die attached to the first surface of the substrate;
a plurality of bond wires extending through the at least one substantially centrally located opening in the substrate and bonded from the active surface of the semiconductor die to the second surface of the substrate; and
a plurality of conductive bumps disposed between the active surface of the semiconductor die and the first surface of the substrate.

17. (Previously presented) A computer system comprising:
a computer having a circuit board therein; and
at least one semiconductor assembly mounted to the circuit board, the at least one semiconductor assembly comprising:
a substrate having a first surface, a second surface and at least one opening of the substrate of the at least one semiconductor assembly extending proximate more than one side of a periphery of the substrate at least one opening in the substrate extending from the first surface to the second surface of the substrate;
a semiconductor die having an active surface and a back surface, the active surface of the semiconductor die attached to the first surface of the substrate;
a plurality of bond wires extending through the at least one substantially centrally located opening in the substrate and bonded from the active surface of the semiconductor die to the second surface of the substrate; and
a plurality of conductive bumps disposed between the active surface of the semiconductor die and the first surface of the substrate.

18. (Previously presented) The computer system of claim 16, wherein the semiconductor die is attached to the substrate having peripheral bond pads on the active surface of the semiconductor die exposed through the plurality of openings and centrally located bond pads on the active surface of the semiconductor die are mirrored with bond pads on the first surface of the substrate having the plurality of conductive bumps therebetween.

19. (Previously presented) A computer system comprising:
a processor device electrically connected to a circuit board; and
at least one semiconductor assembly mounted to the circuit board, the at least one semiconductor assembly comprising:
a substrate having a first surface, a second surface and at least one substantially centrally located opening therethrough, the at least one substantially centrally located opening in the substrate extending from the first surface to the second surface of the substrate;
a semiconductor die having an active surface and a back surface, the active surface of the semiconductor die attached to the first surface of the substrate;
a plurality of bond wires extending through the at least one substantially centrally located opening in the substrate and bonded from the active surface of the semiconductor die to the second surface of the substrate; and
a plurality of conductive bumps disposed between the active surface of the semiconductor die and the first surface of the substrate.

20. (Previously presented) The computer system of claim 19, further comprising an input device electrically connectable to the processor device.

21. (Previously presented) The computer system of claim 19, further comprising an output device electrically connectable to the processor device.

22. (Previously presented) A computer comprising:
a computer having a circuit board therein having a circuit thereon; and
at least one semiconductor assembly connected to the circuit of the circuit board, the at least one semiconductor assembly comprising:
a substrate having a first surface, a second surface and at least one substantially centrally located opening therethrough, the at least one substantially centrally located opening in the substrate extending from the first surface to the second surface of the substrate;
a semiconductor die having an active surface and a back surface, the active surface of the semiconductor die attached to the first surface of the substrate;
a plurality of bond wires extending through the at least one substantially centrally located opening in the substrate and bonded from the active surface of the semiconductor die to the second surface of the substrate; and
a plurality of conductive bumps disposed between the active surface of the semiconductor die and the first surface of the substrate.

23. (Previously presented) A system including:
a computer connected to a circuit board; and
at least one semiconductor assembly mounted to the circuit board, the at least one semiconductor assembly comprising:
a substrate having a first surface, a second surface and at least one substantially centrally located opening therethrough, the at least one substantially centrally located opening in the substrate extending from the first surface to the second surface of the substrate;
a semiconductor die having an active surface and a back surface, the active surface of the semiconductor die attached to the first surface of the substrate;
a plurality of bond wires extending through the at least one centrally located opening in the substrate and bonded from the active surface of the semiconductor die to the second surface of the substrate; and
a plurality of conductive bumps disposed between the active surface of the semiconductor die and the first surface of the substrate.

24. (Previously presented) A device including:
a computer connected to a circuit board; and
at least one semiconductor assembly mounted to the circuit board, the at least one semiconductor assembly comprising:
a substrate having a first surface, a second surface and at least one substantially centrally located opening therethrough, the at least one substantially centrally located opening in the substrate extending from the first surface to the second surface of the substrate;
a semiconductor die having an active surface and a back surface, the active surface of the semiconductor die attached to the first surface of the substrate;
a plurality of bond wires extending through the at least one substantially centrally located opening in the substrate and bonded from the active surface of the semiconductor die to the second surface of the substrate; and
a plurality of conductive bumps disposed between the active surface of the semiconductor die and the first surface of the substrate.